The Environment—Our Natural Features & Resources

In recognition of the global environmental impact of local actions, the residents of the City of Fairfax place great importance on the preservation and restoration of the natural environment. Preserving and restoring local ecosystems and habitats as well as open space; minimizing pollution and mitigating its effects are priorities for the City.

Natural Features—A Site Analysis

The planning, development and use of any property is strongly affected by the characteristics of the land, including the local geology, climate, soils, topography and streams. From the area's earliest developments through the most recent projects, these characteristics remain an important part of life in the City of Fairfax.

Geology

The City lies in the Piedmont Province underlain primarily by crystalline rock. A thick layer of this rock beneath the topsoil is weathered into a fine clay-rich material. Bedrock levels vary from near the surface to 150 feet below the surface.

With the exception of areas underlain by mafic rocks in the western portion of the City and floodplains, most areas of the City are generally suitable for development purposes if the site is properly engineered. Developers should confirm the suitability of soils through a geological study of the property and design the site to meet the requirements set forth in the geotechnical report.

Climate

The City has a continental, humid, temperate climate. Precipitation is generally ample and occurs mainly in the summer and spring.

Soils

According to the Soil Survey of Fairfax County, Virginia (1963), most of the City falls into the Fairfax-Beltsville-Glenelg and the Glenelg-Elioak-Manor soil associations. Most of the soils in the Fairfax-Beltsville-Glenelg association are well suited as material for home sites. With some exceptions, the soils of the Glenelg-Elioak-Manor association are also well suited for urban development purposes. Much of the land within the City's floodplain falls into the Chewacla-Wehadkee association. These soils are poorly drained, subject to flooding, and not suitable for urban development.

A fourth association, the Orange-Bremo-Elbert, is found in the western portion of the City near Jermantown Road. Soils in the Orange series, which compose 65 percent of the association, are poorly drained with massive bedrock two to five feet below the surface. Because of the high shrink-swell potential and beds of hard rock found close to the surface, the construction of buildings and improvements on these soils is unusually difficult. The Soil Survey of Fairfax County, Virginia notes that the Orange soils are among the poorest materials in the County for housing developments. Another feature of the Orange series is the presence of asbestos. The asbestos is found in several forms, including the fibrous form, which, when airborne, can cause lung diseases. The presence of asbestos fibers in the air during construction can be a hazard to construction workers. This problem is mitigated with the replacement of topsoil following construction.

Topography

Any development or redevelopment within the City must take topographic constraints into consideration. Steep slopes in excess of 15 percent and slopes located along streams are susceptible to erosion and, therefore, particular care must be taken when planning to develop a site with these characteristics. In some instances, special engineering may be required to stabilize slopes. Where development is proposed on or adjacent to areas designated on the City's Chesapeake Bay Resource Protection Area map (see Map ENV-2), the City's Chesapeake Bay Preservation regulations specify allowable uses and requirements for protection of sensitive areas.

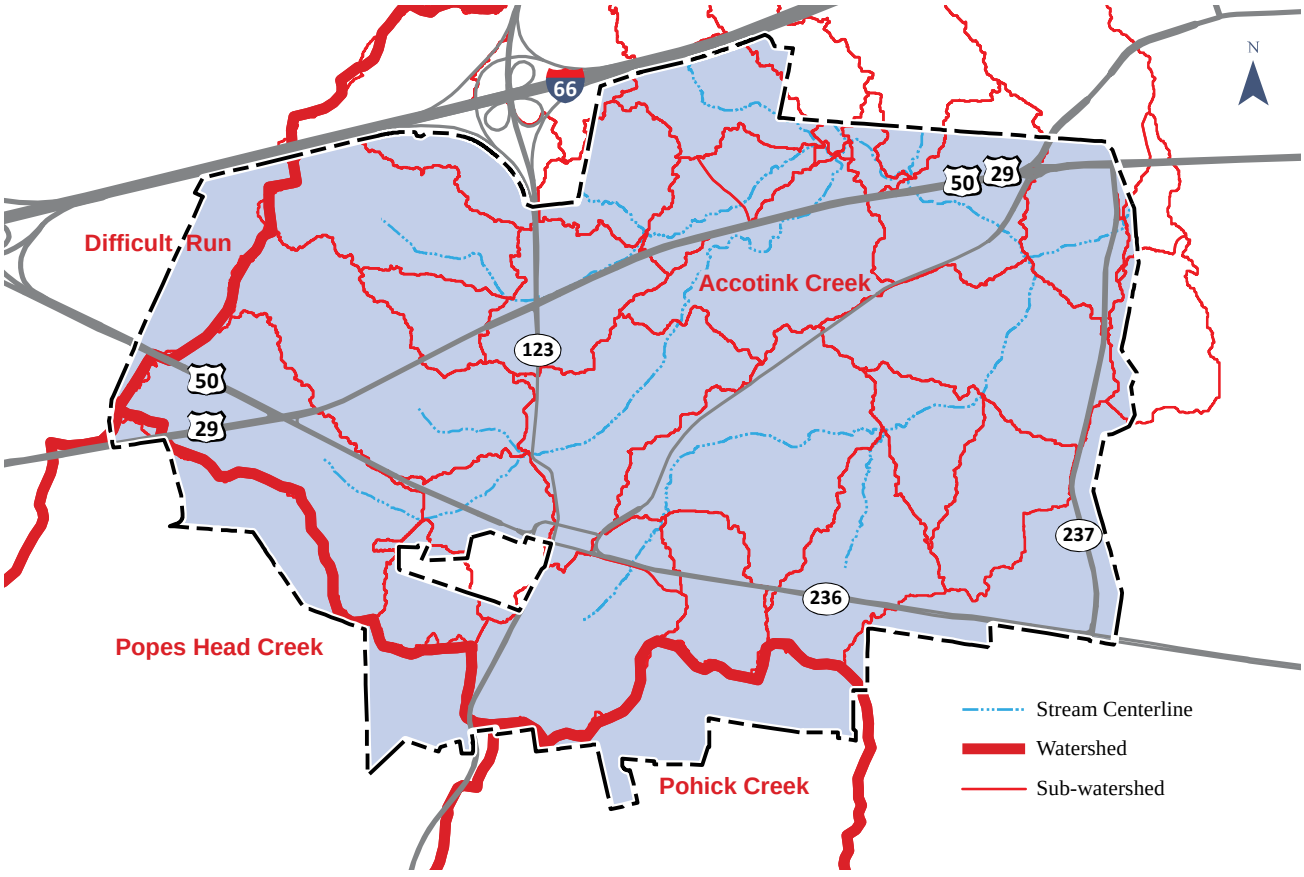
Only a very small portion of the City's land area has slopes of greater than 15 percent. These areas are primarily associated with reaches of Accotink Creek and Daniels Run and lie within the City-owned Van Dyck and Daniels Run Parks and in the Army Navy Country Club property.

Major Streams and Watersheds

The City of Fairfax is located at the confluence of four major drainage divides and includes portions of the Accotink Creek, Pohick Creek, Pope's Head Creek, and Difficult Run watersheds (see Map ENV-1). As a unique consequence, practically all watercourses within the City (with the exception of a few tributaries to Accotink Creek in the northeastern portion of the City) originate within its boundaries and are not directly affected by activities from neighboring jurisdictions. This provides a considerable level of control to the City over the water quality of its streams. Major perennial streams that flow through the City include Accotink Creek (north and central forks) and Daniel's Run (also known as the south fork of Accotink Creek), all of which drain to Accotink Creek within the City. Many smaller tributaries drain to Accotink Creek and Daniels Run in a roughly dendritic (branched) pattern that has been substantially modified by development and channelization.

Map ENV-1

Drainage Basins



In 1994, City voters approved bond funding for stormwater improvements to address stream erosion occurring as a result of increased stormwater runoff resulting from land development. Prior to the adoption of stormwater regulations in 1978, developers were not required to provide on-site stormwater detention. While regulations are now in place they are not able to address all of the uncontrolled development that occurred. To restore the stream channels and keep them from eroding, the stormwater funds were used to restore the channels and design them to handle the higher storm flows. Stream erosion continues to be an issue the City will need to monitor and address.

Natural Resources — To Use and Protect

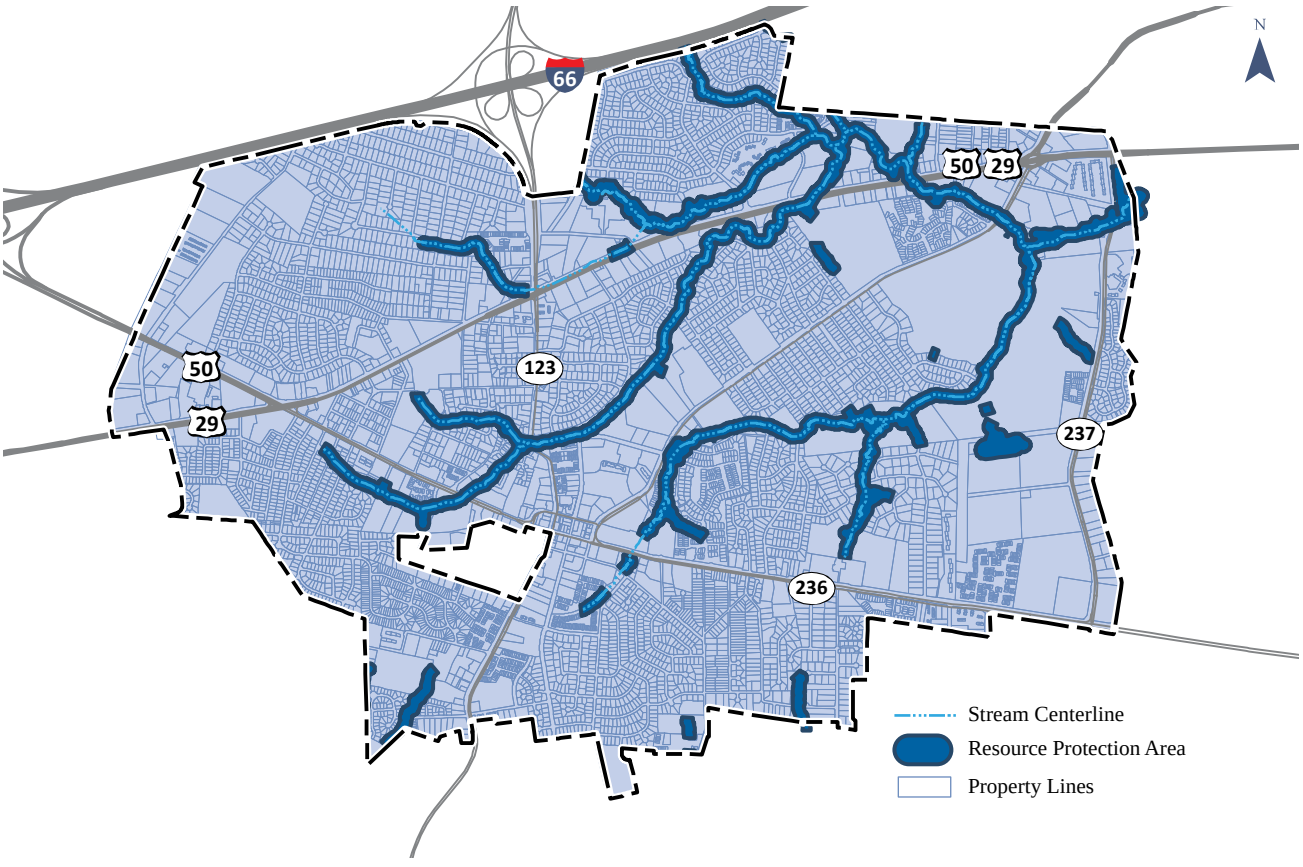
The City has several categories of natural resources that are easily impaired by urban land uses. Of particular concern are water quality, riparian and floodplain areas, and open space. These are covered in separate subsections below or in the case of open space, in a subsequent chapter. There are no known agriculture operations in the City of Fairfax, with the exception of small family gardens and the new City community gardens, which are scattered throughout sections of the City.

Stream Water Quality

When it rains, stormwater is channeled to the City's streams either overland or through the City's network of stormwater pipes. As water flows over varying land types and streets, sediments and pollutants are transported to the City's streams where they eventually flow to the Chesapeake Bay. Since the City first adopted a Chesapeake Bay Ordinance in 1990, new and redevelopment projects have had to meet requirements to reduce nonpoint source pollution in accordance with the requirements in the Ordinance. Furthermore, the City has adopted a Chesapeake Bay Resource Project Map (see Map ENV-2) that is used to confirm if a property is located in a resource protection area. For properties located in these areas, there are limitations on development and special requirements to ensure water quality is protected. The City continues to work closely with the Virginia Department

Map ENV-2

Chesapeake Bay Resource Protecton Area



of Conservation and Recreation to ensure the Ordinance meets all of the latest requirements. The Ordinance was last amended in 2003.

As a result of pollutant levels in the local streams, Total Maximum Daily Loads (TMDLs) have been established for both Accotink Creek and the Chesapeake Bay. TMDLs refer to the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards. As the City is located in both of these watersheds, new stormwater requirements will be established to meet the new load requirements.

To address water quality, quantity and local stormwater management program criteria the Virginia General Assembly stipulated that amended stormwater regulations become effective within 280 days after EPA established the Chesapeake Bay TMDL or no later than December 1, 2011. The proposed new regulations amend the technical criteria for stormwater discharges and establish minimum criteria for locality administered stormwater management programs. The proposed regulations include new phosphorus standards for both new and redevelopment projects. The effective date of the new regulations was September 13, 2011. The City shall be required to adopt the new regulation no sooner than 15 months and not more than 21 months following the effective date of the regulation.

Development projects in the City will need to comply with the new stormwater regulations and the Accotink and Chesapeake Bay TMDL requirements. Furthermore, it will be necessary for the City to implement new measures to meet the TMDL requirements. While the exact cost of improvements and associated maintenance is unknown at this time, substantial investments in stormwater infrastructure are anticipated.

Floodplain Areas

Floodplain areas include land adjacent and along a natural drainage way that is subject to continuous or periodic inundation or flooding. In addition to providing areas of overland relief for flood waters, these areas are also important in providing a buffer that is capable of filtering pollutants from stormwater prior to entering the stream. Any development in the floodplain must comply with the floodplain section of the City's Zoning Ordinance. Floodplain areas are also generally within areas designated on the City's Chesapeake Bay Resource Protection Area map. For the purpose of protecting the general public from the hazards of flooding, the City of Fairfax, like most other jurisdictions, establishes and regulates an official 100-year floodplain and participates in the National Flood Insurance Program (NFIP) through the Federal Emergency Management Agency (FEMA).

Tree Cover & Significant Woodlands

Because the City is almost entirely developed, few significant forested areas remain. Those that still exist, whether public or private, deserve specific attention so that their aesthetic and ecological benefits to the City are not lost. In addition to these areas, City streets are lined with trees planted and maintained by the Public Works Department. Street trees provide both the aesthetic benefits of a canopy and the framing of streets as well as a cooling of microclimates.

One of the City's most significant stands of vegetation is located in Daniels Run Park. The park covers 45 acres, most of which is covered in native vegetation. It contains deciduous vegetation with an oak canopy and a beech understory. Other tree types found there are hickory, sycamore, tulip poplar and holly. The 13-acre Van Dyck Park is partially wooded, as is the 7.5-acre Ranger Road Park. Providence Park, covering 17 acres, has significant wooded areas, and contains many of these same tree types. In addition, using funds approved by voters in the November 2000 referendum, the City has acquired additional open space including the Stafford, Grefe, Jester, Rebel Run and Ashby Road properties. These properties are now used for a variety of active and passive activities, and have added several acres of tree cover on City-owned property.

No large privately owned tracts of land in the City remain heavily wooded. The last two such tracts were the Farr property, located between Old Lee Highway and Main Street, developed between 1997 and 2002, and the Pickett's Reserve property, located east of Pickett Road. The eastern portion of the 234-acre Army Navy Country Club along Pickett Road is also substantially wooded, despite recent golf course additions. The Country Club property is expected to remain as privately owned recreational land; however, no mechanism is in place to assure the retention of this open space.

For the protection of trees citywide, the City adopted a tree preservation ordinance in 1989 to ensure the proper planting and care of trees throughout the City, to preserve existing trees and tree stock, and to provide for appropriate screening and landscaping. The tree preservation regulations also address the removal of mature trees on public and private property within the City. The City may designate "special trees" (heritage, memorial, or specimen trees) and provide that such trees may not be removed or destroyed.

Although the development of property generally requires the removal of a proportion of the site's tree cover, it is often possible to designate areas of tree protection that may include clusters of trees or individual trees of significance. Developers should provide the appropriate measures for protecting clusters and individual trees throughout the development. Particular attention should be given to native species, such as yellow poplar, white oak, and southern red oak.

Saving mature trees to minimize net loss of tree cover as the City reaches build-out is important to the health of the City's urban forest. Where feasible, developers should seek to transplant trees that are removed during the development process. These trees should be transplanted on the development site or in public areas or rights-of-way, at the City's discretion. The goal is to preserve a mix of older and specimen trees along with planted or saved saplings to ensure an abundance of healthy and valuable trees. The City continues to support the planting of street trees in medians of the arterial highways, as well as in available tree lawns in the rights-of-way of collector and local streets.

Several trees in the City have been identified by arborists as being noteworthy due to size, age, and significance of species. The most important is a White Oak on Brookwood Drive. In 1987, this tree was officially commemorated as a U.S. Constitution Bicentennial tree in a program sponsored jointly by the National Arborist Association and the International Society of Arboriculture. The other noteworthy trees include a Southern Red Oak on Randolph Street and a White Oak at Farrcroft. The combination of poor air quality and unstable levels of groundwater have placed significantly more stress on the City's trees over recent years. In addition, many other trees were removed in association with the development of Farrcroft, Pickett's Reserve, Chancery Park and Providence Square. These included one large American elm at Farrcroft.

The City's concern for trees is reflected in its Arbor Day tree planting and community appearance activities, and its continuing designation as a Tree City by the National Arbor Day Foundation each year since 1987. The City provides funding to plant new trees and shrubs in the City right-of-way on a continuing basis. The City also seeks grants, on an ongoing basis, to supplement City funding of landscape planting and maintenance efforts.

Wildlife

Throughout the City of Fairfax, many of the native trees and shrubs have continued to thrive through two hundred years of increasingly intense use of the land. The tree canopies of many of the residential neighborhoods in the City support many species of birds and other animals. A walk down the trails along Daniels Run reveals even more variety of wildlife. Altogether, a wide variety of wildlife remains in the City.

The variety of species that remain in the City is perhaps misleading. Much of the wildlife that once existed in the City no longer finds a habitat here. The varied requirements that are necessary to support all of the activities through the life cycle of many plants and animals native to the area are not currently supported by the City's environment. Many species are struggling to maintain a foothold against the pressures of invasive species and the pressures caused by nearby human activities.

Maintaining wildlife habitat in open space corridors throughout the City will help to preserve the diversity of life while providing animal species with more desirable alternatives than invading human living spaces. Through the development and maintenance of City properties and by working with developers and homeowners' associations, the City should encourage contiguous open space and the use of native plant materials while discouraging the use of invasive species.

Natural Ecosystems

The preservation of natural ecosystems is important with regards to local, regional and global environmental needs. Because the City has very little land that has not been actively appropriated for human use in recent times, the small amount of natural area that remains is all the more important to the City. Over recent years the City has placed—and increased—restrictions on the use and maintenance of Daniels Run Park.

Human Habitats—Places to Live, Work and Visit

The City of Fairfax is home to its residents, workers, and students; it is also an important neighbor to many shoppers. The quality of our immediate environment affects many aspects of the everyday life of all who spend time in the City. Clean, safe and healthful surroundings are necessities for enjoying the high quality of life that we have come to expect in the City. In future planning, the City should continue its efforts to protect the natural environment while also incorporating sustainability practices to address the regional goals to lower greenhouse gas emissions and protect water quality.

Water Supply Protection

The City's water supply system consists of two water reservoirs (Beaverdam Creek and Goose Creek) and a water treatment plant on Goose Creek in Loudoun County. The treatment plant is linked to the City by a 25-mile transmission line that also serves part of eastern Loudoun County and parts of Fairfax County. A further description of the City's water utility is provided in the Public Facilities and Services section of this Plan.

Clean Water Act

The main objective of the federal Clean Water Act is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." Nonpoint-source pollution is a major and extremely difficult problem, often starting far from the waters that are eventually contaminated. It begins when rainwater and melting snow run over the land and carry pollutants that may occur naturally or are caused by human effects on surface water or ground water. These pollutants are then concentrated in local drainage basins and transported to larger tributaries.

Section 303(d) of the Clean Water Act requires Total Maximum Daily Loads (TMDLs) to be established for impaired waters. The section of Accotink Creek in the City of Fairfax is on Virginia's 2008 303(d) list of impaired waters for failing to attain the aquatic life designated use due to poor health in the benthic biological community. Since Accotink Creek flows to the Chesapeake Bay, the City must also comply with the Chesapeake Bay-wide TMDL for nutrients and sediment.

Under Section 402 of the Clean Water Act, pollutant discharges into stream, rivers and bays are regulated under the National Pollutant Discharge Elimination System (NPDES). To meet this requirement in Virginia, the City is required to have a permit for the municipal storm sewer system. Based on the City's population, the City is considered a phase II MS-4. All new or revised NPDES permits must be consistent with any TMDLs established within the City's boundaries.

With respect to local government land use regulations, the City has a Chesapeake Bay Preservation Ordinance that was last amended in November of 2003 that meets Virginia's requirements under the Code of Virginia (Section 10.1-2100). The regulations establish criteria for use in approving, denying or modifying requests to rezone, subdivide, use and develop land in the areas designated on the City's Chesapeake Bay Resource Protection Area map. In addition, Section 404 of the Clean Water Act requires a permit to be obtained from the Army Corps of Engineers for any dredging or filling of wetlands. This includes building roads and placing public utilities as well as private development.

Air Quality

The air quality in the region is determined through measurement of pollutants including sulfur dioxide (SO2), nitrogen dioxide (NO2), hydrocarbons (HC), lead (Pb), carbon monoxide (CO) and suspended particulates. Sulfur dioxides, nitrogen oxides, hydrocarbon and carbon monoxide are all a direct result of reactions caused by combustion engines. Lead in air pollution results primarily from the burning of leaded fuels. (The incidence of lead in the air dropped significantly since 1975 with the introduction of unleaded gasoline.) Suspended particulates consist of dust, smoke and other solid and liquid particles small enough to suspend readily in the air and are generated through industrial, incineration and construction point sources, as well as vehicle exhaust.

Ground-level ozone is a colorless gas formed by a chemical reaction between Volatile Organic Compounds (VOCs) and oxides of nitrogen in the presence of sunlight. The Washington Metropolitan region, based on the 1990 Clean Air Act, is classified as a "serious non-attainment area" with respect to ozone pollution. On average, the region violates the federal ozone standard four times each summer. The Metropolitan Washington Council of Governments (MWCOG) declares air pollution alerts, particularly in response to accelerated ozone levels. These alerts are directed toward the young, the elderly, and those segments of the population with respiratory disorders.

Because many of these pollutants have a common source, vehicle exhaust, vehicle trip management and methods to reduce traffic congestion have been targeted in reducing pollutants. The City has a coordinated traffic signal system that is programmed to increase the efficiency of traffic flow thereby reducing congestion. While continuing to seek efficiencies, ultimately a reduction in vehicle miles traveled (VMT) is needed to have long lasting impacts on automobile emissions.

The Clean Air Act Amendments (CAAA), adopted by Congress on November 15, 1990, call for integration of transportation, land use and air quality planning within individual jurisdictions and coordination of planning between jurisdictions. The City, as a member of MWCOG, integrates its planning efforts with regional planning efforts through membership on various subcommittees. Recommendations and information emanating from these subcommittees are

then transferred to a separate committee, the Metropolitan Washington Air Quality Committee (MWAQC), which develops regional strategies to control ozone.

While local jurisdictions are cooperating to control ozone, the Commonwealth of Virginia is required to develop control strategies for regions with non-attainment status. The federally mandated State Implementation Plan (SIP) for the Northern Virginia region (to be reviewed by the EPA) includes more stringent vehicle emissions inspections, requires Stage II vapor recovery nozzles at gasoline pumps, and clean fleet standards for both public and private vehicle fleets. Failure to meet EPA approval for the SIP and its implementation could result in the loss of federal transportation funds for roads and highways.

The Safe, Accountable, Flexible, and Efficient Transportation Act: A legacy for Users (SAFETEA-LU) and legislation following it provide funding sources to state and local government for implementing measures to develop an economically efficient and environmentally sound national transportation system. As part of the coordinating responsibilities, the City encourages land use and transportation planning supportive of regional efforts to combat ozone pollution.

The City-owned and operated CUE bus system, with service to and from the Vienna/Fairfax-GMU Metro station and George Mason University, is an important link in regional mass transit. The City has incorporated six hybrid diesel electric buses into the fleet resulting in approximately a thirty percent fuel savings over traditional diesel buses. The City bike and trail system is connected to county and regional trails providing further alternatives to automobile travel. Land use planning that provides higher densities along transit routes while preserving significant open space, mitigates congestion and provides easier access to mass transit.

Solid Waste Management

A balanced and integrated system of environmentally sound waste disposal is a major challenge. With the disposal of solid wastes in landfill sites becoming increasingly difficult and expensive, the City adopted a Solid Waste Management Plan in 1991, based on Virginia Department of Waste Management (DWM) guidelines, which promotes source reduction, reuse, and recycling of solid waste as the preferred methods of waste management.

The City maintains an aggressive recycling program, through its curbside multi-material recycling program in single-family neighborhoods. The combined recycling rate for residential and commercial properties for 2010 was 52 percent. In 2009, the City started requiring commercial and multifamily properties to submit annual recycling reports with the type and weight/volume of each material reported (City Code Sec. 74-9). The City continues to promote policies and programs to increase the annual recycling rate.

Asbestos

As discussed under the Soils heading of this section, the Orange soil series, found along the western boundary of the City, includes a fibrous form of asbestos. Areas containing soils of the Orange series should be carefully monitored to prevent asbestos fibers from becoming airborne. Monitoring is most needed during construction and maintenance operations; during all other times, ground cover should be in place to prevent wind and water from causing fibers to become airborne.

Radon

Radon is a colorless, odorless radioactive gas produced by the natural decay of uranium and radium in rocks and soils. Only recently have scientists discovered that significant amounts of radon can accumulate in buildings from underground rocks and soils. Research has shown a link between lung cancer and high levels of exposure to radon.

A 1988 study by the U.S. Geological Survey examined the rocks and soils in the City and rated their radon potential. Areas were rated on a scale of 1 (low) to 5 (high) based on the likelihood that the radon level exceeded 4 picocuries per liter (the EPA-designated level requiring remedial action).

In 1991-1992, the Commonwealth of Virginia, in conjunction with the EPA, conducted a residential radon survey for all the localities within the state. Of the 21 samples taken in the City, only two houses showed concentrations greater than the established limit of 4 picocuries per liter. The average concentration was 2.1 picocuries per liter with a maximum of 8.5.

Noise

City residents are increasingly aware of noise as an unwanted intrusion. Noise in the City is primarily produced by surface vehicles and, to a lesser degree, by airplanes. Consequently, noise pollution is most concentrated along the City's main roads and along Route 66. In response to requests from residents along the northern border of the City at Route 66, the Virginia Department of Transportation installed highway noise barriers roughly from Marilta Court to Plantation Parkway.

In addition, the City Code and Zoning Ordinance identify noise-related regulations, which are enforced by the Police Department. Examples of noise violations include excessive volumes of radios, loudspeakers and voices as well as construction related or automotive noises. While incidents of loudspeakers and radios from stationary sources remain rare, complaints of traffic noise (particularly from trucks and motorcycles) have increased over recent years. Over the past several years the City has taken an active role in amending its noise ordinance and working with businesses to find ways to contain and minimize noises found to be particularly objectionable to neighbors in certain areas.

Abating Hazards and Preventing Pollution

Environmental pollution over the past 150 years has dramatically altered the local, regional and global environments. At all three scales, the solutions require local action. One of the most recent significant concerns relates to greenhouse gas emissions. There are regional efforts underway to develop greenhouse gas inventories in an effort to target reductions to reduce energy use and lower greenhouse gas emissions. In addition, stream water quality, toxic substance spills, and leaking underground storage tanks are issues the City continues to monitor.

Chesapeake Bay Preservation

The City adopted Chesapeake Bay Preservation regulations in 1990 to implement the Chesapeake Bay Preservation Act (CBPA). The Virginia General Assembly adopted the Act in 1989 (amended in November 1990) to protect and improve the water quality of the Chesapeake Bay, its tributaries and other state waters. The City's Ordinance was last amended in November 2003.

The City's Chesapeake Bay Preservation program was initially found "provisionally consistent" on August 21, 1991. Since that time, the City's Department of Community Development and Planning and Department of Public Works have cooperatively implemented these regulations and adopted amendments to meet any new requirements. As part of the most recent Ordinance amendment in 2003, a new Chesapeake Bay Resource Protection Area Map was adopted depicting all areas that require special review to protect water quality (See Map ENV-2). The City's Chesapeake Bay Ordinance requires the protection of sensitive environmental lands, safeguarding the quality of state waters, preventing further increase in pollution of state waters, reducing pollution of state waters and promoting water resource conservation in order to provide for the health, safety and welfare of the present and future citizens of the City. All site plans, development plans and land disturbances undergo review for Chesapeake Bay Ordinance compliance. The City's website has also been updated to include a webpage on the Chesapeake Bay Ordinance with information on the City's Ordinance as well as links that provide additional information and requirements.

Storm Water Management

The purpose of stormwater management is to reduce the adverse effects of urban runoff by reducing flow velocities and enhancing water quality. The City's storm water management system is composed of natural drainage ways (streams, creeks and ditches) and manmade structures (storm drains, on-site detention systems, low impact development and best management measures) in both public and private ownership.

Erosion of stream channels is a natural process. However, changes in flow rates resulting from urban development have accelerated this process in the Accotink Creek basin watershed, and the resulting streambed erosion is endangering the stability of sanitary sewer pipes crossing under streams in the City. Deposition of this eroded material endangers the flood control capabilities of the storm water management system.

The City's erosion and sediment control regulations address the prevention of soil erosion into the City's tributaries during construction. These regulations prevent the degradation of properties, stream channels, waters, and other natural resources by providing that adequate soil erosion and sediment control measures are taken before, during, and after development. The City's Erosion and Sediment Control regulations implement the Virginia Erosion and Sediment Control Law (§10.1-560 et seq., Code of Virginia (1950)) as well as the Chesapeake Bay Preservation Act. Land owners proposing land disturbing activity of greater than 2,500 square feet must take steps to ensure that sediment associated with development does not leave the site. This is accomplished through the installation of silt fences, sediment traps, and similar structures.

The City's largest investment in stormwater improvement projects was funded through a voter approved bond in 1994. The majority of the 2 million dollars in funding was for stream restoration. Since this time, the City has restored over 4 miles of streams in the City. Additional stormwater projects have been funded by the City Council through either the Capital Improvement Program or in some cases a dedicated portion of the real estate tax.

Environmental Hazard Abatement

The City has a Hazardous Material Emergency Response Plan (HMERP) that is prepared and updated annually by the Fairfax Joint Local Emergency Planning Commission (FJLEPC). The Commission, which is composed of emergency response officials from the City, Fairfax County, and the towns of Herndon and Vienna, annually submits a new response plan to be reviewed by the Virginia Emergency Response Council (VERC). The HMERP identifies Critical Hazard Facilities (CHFs), determines available emergency response resources on site, specifies evacuation plans and identifies emergency response procedures.

Within the City of Fairfax, the 1995 HMERP identifies two CHFs. The first is Verizon, which operates a telephone switching facility on the south side of Fairfax Boulevard west of the intersection with University Drive. This relatively small facility has no prior incidents involving the release of hazardous materials. The second CHF is the petroleum bulk storage facilities located on Colonial Avenue in the Pickett Industrial Park (also known as "the tank farm"). This facility is composed of four commercial storage facilities (Buckeye Pipeline, TransMontaigne, Citgo Petroleum Corporation, and Motiva) and an underground pipeline station operated by Colonial Pipeline. The bulk facilities store large quantities of gasoline and fuel oil in above-ground storage tanks (ASTs) supplied through the pipeline. Ethanol for blending with gasoline is transported into the facility by truck and is stored in AST's. The products are dispensed to tank trucks through bottom-fed loading racks. Most of the ASTs are equipped with piping for the application of fire fighting foam in the event of a tank fire and all loading racks have automatic fire suppression systems in case a fire or explosion occurs during loading operations. The City's Fire Department has developed an extensive plan to respond to and control any incident at the Pickett Road facility.

While no major accidents have occurred in the history of this facility, there have been several spills and detections of underground contamination. The largest such contamination, discovered in the fall of 1990, consisted of a large plume of hydrocarbons in the subsurface extending from the facility into a residential community east of Pickett Road in Fairfax County. As a result of this discovery, the United States Environmental Protection Agency (EPA) took full authority over the site remediation process. The first phase consisted of emergency response and containment. As of the beginning of 1993, the resultant plume had been stabilized and contained. Phase II, initiated in 1995, consisted of a Corrective Action Plan (CAP). Under the CAP, a series of pilot studies determined appropriate technology for remediation. As part of this phase, a Risk Assessment determined the acceptable levels of contamination to be attained. Phase II was completed in 1997. The final phase applied the technology identified in phase II to remediate he site. The offsite portions of the equipment used in this phase have been shut down for over two years to determine whether natural attenuation is effective as active remediation at this point in the process. It is anticipated that the operators will petition for a permanent shutdown and removal of the offsite equipment in the spring of 2012.

While the contaminated soil will never regain its original condition, this incident has served to create greater cooperation between the City and the bulk storage facilities. The City's Office of Code Administration supplements its annual inspection with an additional 5 hours per week of scheduled inspections at that site. Also, the facilities themselves have spent millions of dollars retrofitting the existing equipment to comply with more stringent AST standards initiated by the Virginia Department of Environmental Quality (DEQ) and as part of a consent order entered into with EPA. The City was instrumental in the support of HB 2103 which requires owners of tank farm facilities having an aggregate capacity of one million gallons and greater in the City of Fairfax to meet new performance standards by July 1, 2021. The new performance standards will require installation of proven methods to contain oil discharges from tanks and related piping to reduce the potential for future leaks.

Environmental Sustainability—What Can We Do?

To address regional concerns for the environment, the City supports programs and policies that reduce energy consumption through LEED or other green building rating systems, reduce stormwater flows and improve water quality, increase recycling and reuse of materials, reduce water use, protect and preserve open space, promote sustainable development and support transportation policies that promote the use of public and alternative modes of transportation. To become more sustainable will require reducing the use of non-renewable resources and the development and use of renewable sources of energy. In addition, the City encourages private property owners to incorporate sustainable measures, particularly commercial offices which could also enhance building class designation and attractiveness to potential lessees through these types of improvements.

Over the past few years, much planning attention has been focused on the issues of environmental sustainability. Both research efforts and available solutions fall into three logical categories of scale-local, regional and global. While the local scale is most applicable to the City's planning efforts, the regional and global also depend on local action. Following are lists of actions that the City can undertake to promote environmental sustainability:

At the ***Local*** scale:

- Preserve mature ecosystems, streams, stream buffers and forests
- Minimize impervious cover and input of hydrocarbons and toxins to streams
- Maximize tree canopy and infiltration of rain water
- Maintain stream flows and low summertime stream temperatures
- Minimize the cost of meeting environmental objectives

At the ***Regional*** scale:

- All local level actions
- Minimize input of phosphorus, nitrogen and sediment to streams

At the ***Global*** scale:

- Minimize transportation requirements
- Maximize heating and cooling efficiency of human habitats through site planning and architectural design
- Maximize global forest cover and tree cover.

In 2009, the City Council adopted a Resolution recommending the incorporation of green building practices and climate protection strategies for development and operations in the City. Through this resolution the City resolved to support green building and the use- of LEED or a similar rating system. In addition, goals were included to establish LEED silver as the standard for all City facilities and to encourage LEED certified rating for private development. In 2009, the City Council also passed a Resolution establishing an Environmental Sustainability Committee. The committee serves an advisory role to the City Council and Boards and Commissions on environmental issues. The committee is committed to guiding the City to become an environmentally sustainable "green city" and as part of that process will identify and recommend programs and policies that will engage residents and local businesses in this effort.

The Environment— Goal, Objectives & Strategies

Goal: Enhance the quality of life through policies and programs that respect the natural environment and protect the City's citizens from environmental hazards.

Objective ENV-1 Encourage the preservation of tree canopy and other natural features.

Strategies

ENV-1.1 Continue to enforce and refine the City's regulations that require new development to preserve existing natural features to the extent practical.

Special protection is provided for trees, floodplains, and watersheds through zoning regulations. Although it is not possible to develop wooded property without removing trees, significant stands of trees should receive considerable attention in the development review process to ensure that all practical and reasonable attempts at preservation have been made. Through the review of development plans and in the process of negotiated rezoning, special use permit and special exception requests, the City can ensure that natural resources are protected.

NV-1.2 Encourage planned development that maximizes the retention of natural features.

Conventional development often results in the destruction of a site's natural features. Sites are often completely denuded of tree cover, the topography is leveled, and streams are piped and covered. Planned developments, however, can be used to encourage buildings, roads and utilities to be arranged in clusters, resulting in the preservation of significant natural features.

ENV-1.3 Support efforts to create green spaces and tree cover throughout the City.

The City should extend its existing program of planting street trees in the street rights-of-way by planting additional trees on properties held by the City for open space purposes. These would include the rights-of-way originally acquired by the City for the possible future extension of streets, unused or excess land on properties that house specific City functions, and parkland.

The City should acquire additional land and easements for the expansion of existing street rights-of-way to allow for tree-lined streets. This could be achieved through development proffers as well as through the establishment of a trust fund into which funds and donations may be placed for future acquisition. The City should continue to seek alternative funding sources for tree plantings and emphasize the use of native species.

ENV-1.4 Support the recognition and preservation of historic and significant tree specimens.

The City should designate special trees for preservation and protection. Preservation of significant specimens on private property should be done in cooperation with the property owner and include provisions for routine maintenance. The City should also institute a Champion Tree program for the recognition of the largest tree of a species within the City. Such a program could be operated with the help of interested volunteers or students and be part of an educational effort on tree preservation.

ENV-1.5 Preserve stream corridors in a natural state.

Land located along streams that serves to provide a substantial habitat for wildlife, mitigates the impact of floods, or serves as a recreational area should be retained and restored (where necessary) to the extent possible. Where appropriate, such areas may be considered for future improvements to the City's storm water management system and recreational facilities.

ENV-1.6 Encourage and support a system of trails that links City residents to open space areas.

Through the local development review process, use of trust funds and grants, regional cooperation and strong public leadership, the City should continue to seek completion and maintenance of an integrated citywide trail system.

Objective ENV-2 Protect air and water quality by preventing pollution and preserving natural resources.

Strategies

ENV-2.1 Assure that the City's water supply and surface water quality comply with all state and federal standards and requirements.

The City should continue to monitor development in eastern Loudoun County so that proper buffers and Best Management Practices (BMPs) will be utilized to protect the City's potable water supply reservoirs.

The City should enhance surface water quality by financing and implementing mitigation projects, and by identifying and mitigating those sources most likely to contribute to stream contamination. Mitigation projects should be carefully designed to minimize destruction of riparian habitat and vegetated stream banks.

ENV-2.2 Seek to improve the City's air quality through regional cooperation and the promotion of innovative technologies.

Although air quality is a regional problem, the City should strive to comply with State and Federal air quality standards by participating in land use strategies and regional initiatives aimed at reducing air pollutants in the Washington area. The City should promote the use of mass transit, walking, and biking by planning for higher densities and mixed-use development/redevelopment at the City's commercial centers and along transit routes and by providing for easy access to mass transit. Traffic signals should be carefully engineered to minimize wait times to help relieve traffic congestion.

ENV-2.3 Sponsor programs and demonstration projects to promote air and water quality and pollution prevention through wise maintenance of real estate.

The City should start a "Natural Lawnscaping Program" utilizing native plants to reduce water use and pollution from mowing and to enhance wildlife habitat, utilizing City properties to support demonstration projects. In developing City properties, apply building and site designs such as green roofs and rain gardens that reduce energy use while reducing runoff and pollution.

Objective ENV-3 Monitor and abate environmental hazards to the maximum extent possible.

Strategies

ENV-3.1 Provide assistance to citizens and businesses seeking to reduce radon and asbestos hazards in their homes or businesses.

The City should gather and disseminate information on radon and asbestos hazards to City residents and businesses by working closely with the Fairfax County Health Department. The City should also provide information to low income homeowners on potential sources of funding to assist them in reducing high radon levels in their homes.

ENV-3.2 Encourage the continued identification, testing and containment of potentially hazardous materials, and increase public awareness of these hazards.

The existence of leaking underground storage tanks (LUSTs) and the presence of bulk petroleum facilities make it imperative for the City to work closely with property owners in mitigating environmental hazards. The City should continue its efforts with the Fairfax Joint Local Emergency Planning Commission (FJLEPC) in identifying the existence of hazardous materials within its borders. Also, the City should work closely with the Virginia Department of Environmental Quality (DEQ) in identifying and mitigating the hazards of LUSTs. Further, the City should pursue options for relocating the Tank Farm from the City.

The City should initiate a long-term environmental monitoring program and further develop the staff expertise necessary to address environmental issues.

Objective ENV-4 Protect the Chesapeake Bay and water resources of the City from the adverse effects of pollution, and improve water quality currently adversely affected by pollution.

Strategies

ENV-4.1 Use the provisions of the state's Chesapeake Bay Preservation statutes to require that development projects control runoff from impervious areas as far upstream as possible and utilize low impact development approach to reduce the input of pollutants to the City's stream system.

The Chesapeake Bay provisions of the state code allow the City to require removal of all types of pollutants from the waters entering the City's streams from development sites. Requirements for maintenance of storm water facilities assure that pollutant removal continues throughout the life of the developed project. The City should require that public and private development projects be planned to minimize impervious cover. The City should continue to work with the Chesapeake Bay Local Assistance Board to refine City regulations, as necessary, to ensure full consistency with the requirements of the Chesapeake Bay Protection Act. The City will further these efforts through the Total Maximum Daily Load (TMDL) requirements that have been set for both Accotink Creek and the Chesapeake Bay.

Map ENV-3

Chesapeake Bay Watershed

ENV-4.2 Carefully monitor the maintenance of soil erosion and sediment control practices during each construction project to assure that all devices continue to serve their purposes throughout the life of the project.

The soil erosion and sediment control provisions of the City's zoning ordinance require the installation of sediment control devices during all land disturbance activities. During construction, these devices often fail to perform their design functions. Only through careful monitoring and enforcement can the City be assured that the soil erosion and sediment control program is successful.

Objective ENV-5 Provide public education and encourage public involvement in environmental protection.

Strategies

ENV-5.1 Develop handbooks, brochures or workshops and otherwise encourage residents and business owners to become environmentally responsible.

The City currently distributes literature on recycling, tree planting, composting, hazardous waste disposal and similar environmental subjects through the Department of Public Works and the Community Relations Office. The City's cable TV channel, CityScreen, advertises workshops and schedules information sessions on environmental concerns. The City should continue to develop additional educational tools to inform and involve the public in environmental protection. An emphasis on the concepts of sustainability and its local, regional and global components should be stressed in all educational efforts. In particular, the City should provide environmental interpretation trails and work with its schools to assure that local examples of environmental issues are worked into the curriculum.

ENV-5.2 Maximize the use of regional and local standing committees to advise Council and educate citizens on environmental protection.

The City has established various committees and ad hoc groups to advise Council and educate citizens on specific local environmental matters. More specifically, the City Council passed a resolution in 2009 establishing an Environmental Sustainability Committee. In addition, the City is represented on

committees of regional organizations such as the Metropolitan Washington Council of Governments and the Northern Virginia Planning District Commission, and benefits from planning and implementation activities of statewide organizations such as the Chesapeake Bay Local Assistance Board. Efforts to protect and improve the environment are generally coordinated at the regional level where policies and programs that transcend jurisdictional boundaries and that impact neighboring jurisdictions are addressed.

ENV-5.3 Refine the City's excellent recycling program to expand materials collected and use additional recycled materials.

As technological advancements in recycling occur, the City should take advantage of economically sound opportunities to expand the materials collected from City offices and residences for recycling.

Objective ENV-6 Preserve natural areas and provide trail linkages to open spaces and natural areas.

Strategies

ENV-6.1 Identify important lands that should be preserved in a natural state; establish a program to preserve these lands by acquiring fee simple ownership or conservation easements, as appropriate.

Beginning with Daniels Run Park, the City should formally establish open space preservation areas where the land will be left in a "natural" condition and where access and use of the land is limited. A citywide survey of existing open space would help identify other areas that remain in a "natural" condition and that should be managed in a manner similar to Daniels Run Park.

ENV-6.2 Identify lands that contain important resources that should be conserved; establish a program to conserve these lands by acquiring conservation easements.

With the development and redevelopment of property along the City's streams, the City's Chesapeake Bay Preservation requirements assure that streams and adjacent buffers are protected during construction. These are not well protected after construction, and lands that were developed before the City initially adopted the Chesapeake Bay Preservation requirements are protected only from redevelopment. Some of these areas contain particularly important resources that could be protected through the acquisition of conservation easements.

ENV-6.3 Provide access to open spaces and natural areas by constructing trails and making trail connections as appropriate to the intended use of the land.

Locate all appropriate trail connections necessary to allow access to the City's important open spaces and natural areas; fund the construction of important trail connections through the development proffer system, where applicable. Limit access to preservation areas.

Objective ENV-7 Protect and enhance the City's wildlife habitat to the extent that it is compatible with human and nearby urban conditions.

Strategy

ENV-7.1 Prepare an urban wildlife management plan describing appropriate steps that the City, its businesses and its residents should take to manage wildlife.

In cooperation with local naturalists, the City should undertake a study of the existing wildlife within the boundaries of the City and identify measures that the City can take to assure protection of the City's wildlife while protecting residents from the effects of pestilent populations. This study should identify steps to take during construction of projects adjacent to natural areas and important considerations for ongoing maintenance of properties throughout the City.